

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

**MALLE et al**

Atty. Ref.: 2350-94

Divisional of Serial No. 09/380,459

Group: Unassigned

Filed: January 25, 2002

Examiner: Unassigned

For: HAIR TREATMENT METHOD

\* \* \* \* \*

January 25, 2002

Assistant Commissioner for Patents  
Washington, DC 20231

**PRELIMINARY AMENDMENT**

Sir:

Preliminarily amend the above-identified application as follows.

**IN THE SPECIFICATION:**

Amend the specification as follows.

Page 1, after line 1, on a separate line, insert --The present application is a divisional of application Serial No. 09/380,459 filed November 22, 1999 which in turn is a 371 national phase application of PCT/FR98/99429 filed March 4, 1998.--

Insert the attached ABSTRACT after the claims pages.

**IN THE CLAIMS:**

Amend the claims as follows.

4. (Amended) Method according to claim 1, characterized in that reduction is carried out to a depth of about 4 to 5  $\mu\text{m}$ .

5. (Amended) Method according to claim 1, characterized in that reduction is carried out to generate 0.1% to 5% by weight of cysteine with respect to the total amino acids of the keratinous hair fibres.

7. (Amended) Method according to claim 1, characterized in that the disulphide bonds of the keratin are reduced using a reducing agent selected from thiols, hydrides, sulphites or bisulphites, phosphines and phosphites, hyperbranched polymers and dendrimers carrying terminal thiol functions.

10. (Amended) Method according to claim 10, characterized in that the phosphine is selected from tris (2-carboxyethyl) phosphine and tris (hydroxymethyl) phosphine.

11. (Amended) Method according to claim 10, characterized in that the phosphine is present in a concentration in the range  $10^{-3}$  M to 1 M.

12. (Amended) Method according to claim 1, characterized in that the pH of the reducing agent composition is in the range 3 to 9, preferably in the range 4 to 7.

13. (Amended) Method according to claim 1, characterized in that the contact

time for the aqueous reducing agent solution with the keratinous fibres is in the range from about 30 seconds to 1 hour, the temperature being in the range from room temperature to a temperature of less than 60°C.

14. (Amended) Method according to claim 1, characterized in that the active compound is selected from colorants, sunscreens, shine agents and hydrophobic compounds, said active compound carrying at least one nucleofugic function.

15. (Amended) Method according to claim 1, characterized in that the active compound is used in an aqueous solution at a concentration in the range from about 10<sup>-3</sup>% to 20%, the pH of said solution being in the range from about 2 to 10.

16. (Amended) Method according to claim 1, characterized in that the contact time for the aqueous solution of active compound is generally in the range from about 1 minute to 1 hour, the temperature being in the range from room temperature to a temperature of less than 60°C.

#### **REMARKS**

Entry and consideration are requested.

The claims have been amended to reduce multiple dependencies.

The Examiner is requested to consider the documents listed in the attached International Search report, copies of which should have been forwarded by the International Bureau, and return a copy of the attached Form PTO 1449 which lists these documents, pursuant to MPEP §609, as an acknowledgment that the documents

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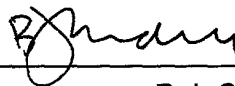
have been considered. The Examiner is requested to contact the undersigned if further copies of these documents are required.

An early and favorable action on the merits is requested.

Respectfully submitted,

**NIXON & VANDERHYE P.C.**

By: \_\_\_\_\_



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**MARKED UP CLAIMS**

4. (Amended) Method according to [any one of the preceding claims] claim 1, characterized in that reduction is carried out to a depth of about 4 to 5  $\mu\text{m}$ .

5. (Amended) Method according to [any one of the preceding claims] claim 1, characterized in that reduction is carried out to generate 0.1% to 5% by weight of cysteine with respect to the total amino acids of the keratinous hair fibres.

7. (Amended) Method according to [any one of the preceding claims] claim 1, characterized in that the disulphide bonds of the keratin are reduced using a reducing agent selected from thiols, hydrides, sulphites or bisulphites, phosphines and phosphites, hyperbranched polymers and dendrimers carrying terminal thiol functions.

10. (Amended) Method according to [any one of Claims 10 to 12] claim 10, characterized in that the phosphine is selected from tris (2-carboxyethyl)phosphine and tris (hydroxymethyl) phosphine.

11. (Amended) Method according to [any one of Claims 10 to 13] claim 10, characterized in that the phosphine is present in a concentration in the range  $10^{-3}$  M to 1 M.

12. (Amended) Method according to [any one of the preceding claims] claim 1, characterized in that the pH of the reducing agent composition is in the range 3 to 9,

preferably in the range 4 to 7.

13. (Amended) Method according to [any one of the preceding claims] claim 1, characterized in that the contact time for the aqueous reducing agent solution with the keratinous fibres is in the range from about 30 seconds to 1 hour, the temperature being in the range from room temperature to a temperature of less than 60°C.

14. (Amended) Method according to [any one of the preceding claims] claim 1, characterized in that the active compound is selected from colorants, sunscreens, shine agents and hydrophobic compounds, said active compound carrying at least one nucleofugic function.

15. (Amended) Method according to [any one of the preceding claims] claim 1, characterized in that the active compound is used in an aqueous solution at a concentration in the range from about 10<sup>-3</sup>% to 20%, the pH of said solution being in the range from about 2 to 10.

16. (Amended) Method according to [any one of the preceding claims] claim 1, characterized in that the contact time for the aqueous solution of active compound is generally in the range from about 1 minute to 1 hour, the temperature being in the range from room temperature to a temperature of less than 60°C.

### **ABSTRACT**

The invention concerns a method for treating hair keratin fibres to provide them with new appropriate properties, comprising the following steps: reducing the sulphur bonds of hair keratin to generate only at the surface of the fibres at a depth less than 10  $\mu\text{m}$ . reactive sites and in fixing covalently on said reactive sites at least one active compound for providing the hair keratin fibres with new appropriate properties, said active compound containing at least a reactive function capable of reacting with said reactive sites formed at the keratin fibre surface. This method is applicable to the treatment of fibrous or non-fibrous keratin substances of human or animal origin.